



## SOLAR EQUIPMENT

In the upper photos are a medical refrigerator and a water pump, both powered by solar cells that convert sunlight directly into electricity. They are representative of a line of solar-powered equipment—manufactured by Independent Utility Systems (IUS), Tulsa, Oklahoma—for use in areas where conventional power is not available. In developing its systems, the company benefited from NASA technology incorporated in the solar panel design and from assistance provided by Kerr Industrial Applications Center (KIAC), Southeastern Oklahoma State University, Durant, Oklahoma. KIAC is one of nine NASA Industrial Applications Centers that provide technical information services to government and industry organizations.

When they were launching their research and development effort, IUS officials sought assistance from KIAC. Most importantly, they were looking for a material that was unbreakable and not affected by ultraviolet light for use as a covering on solar cell panels, such as the one shown at right. A search of the NASA data base disclosed that Jet Propulsion Laboratory had developed, for spacecraft sensor assemblies, a polycarbonate material that was ultraviolet-resistive; it proved ideal for the company's requirement. The data base also provided information about a French company with experience in use of a metal graphite compound; the company is now supplying metal graphite brushes for the DC motors in some IUS systems. These brushes along with permanent magnets, offer long life, an important feature where spare parts and technical knowledge is in short supply, as they are in the remote areas that constitute IUS' principal market.

IUS states that the data supplied by KIAC would have cost hundreds of thousands of dollars to develop internally and that the center's assistance substantially shortened research and development time. A relatively new company, IUS has sold water pumping systems in Pakistan, Egypt and Thailand. It has also placed refrigeration units, used primarily by remote medical clinics for storage of whole blood and vaccines, in India, South America and North Africa.

